21. (New) The method of claim 17 further comprising:

providing a back up pad mounted to a tool shaft;

wherein the abrasive layer comprises a substrate and a plurality of abrasive particles secured to the substrate by a binder; and

wherein the step of attaching the abrasive article to a shaft includes attaching the abrasive article to the shaft adjacent the back up pad.

REMARKS

Drawings

The Examiner objected to the drawings as failing to comply with 37 C.F.R. § 1.84(p)(5) because they included the reference sign 25, which the Examiner stated was not mentioned in the description. However, reference sign 25 is mentioned in the specification at line 6 of page 11: "The backing plate contains a thermoplastic binder material (25 as shown in FIG. 3)."

The Examiner objected the drawings as failing to comply with 37 C.F.R. § 1.84(p)(4) because the reference character 26 had been used to designate both the central aperture and fibers in FIGS. 2 and 3. With this Amendment, Applicants have changed the reference character in the specification for the fibrous reinforcing material to "27," as used in the amended paragraph at page 11, lines 6-11. Moreover, Applicants propose a corresponding change in FIG. 3 of the drawings. Applicants respectfully request the acceptance of these changes and withdrawal of the drawing objections under 37 C.F.R. § 1.84(p).

Specification

Applicant has amended the specification to correct various typographical, spelling, syntax, and grammatical errors. No new matter has been added. The Examiner's acceptance of these amendments is respectfully requested.

Claim Rejections Under 35 U.S.C. Section 103 In View of Block and Stout:

The Examiner rejected claims 1, 2, 4-13 and 16-18 under 35 U.S.C. § 103(a) as being unpatentable over Block, et al., U.S. Patent No. 4,439,907 in view of Stout, et al., U.S. Patent No. 5,316,812. Applicants respectfully submit that the combination of the Block and Stout references is improper.

Obviousness requires that there is a suggestion or motivation to modify the teachings of the prior art. Further, it is submitted that the references must suggest the desirability, and thus the obviousness, of making the combination. The present invention is nonobvious because there is no suggestion or motivation in the prior art to combine the Block and Stout references. Applicant submits that teachings of references can be combined *only* if there is some suggestion or incentive to do so. The mere fact that references can be combined does not render the resultant combination obvious unless the prior art suggested the desirability of the combination.

The mere fact that both Block and Stout disclose abrasive articles cannot alone serve as a basis to support their combination for obviousness purposes. In the Office Action, no explicit suggestion is cited in either Block or Stout to support the modification of Block's disc with the teachings of Stout. However, the Examiner states that the apparent motivation to do so would be "to provide a plate that [will] not substantially deform [or] disintegrate during use." Significantly, however, Block's disc is not disclosed as deficient in this regard.

Stout teaches a disc that can withstand "severe stresses." (Stout, Col. 1, line 34). Block teaches a coated abrasive disc 10 including flexible sheet backing member 12 and abrasive particles 14 attached to the backing member 12 by a suitable adhesive. (Block, Col. 4, lines 4-11). Block teaches that abrasive disc 10 may be attached to a support holder 26 by a single-turn nut and screwed onto the threaded stud of the power tool arbor 24. (Col. 4, lines 47-50; FIG. 9). Block teaches that the coated abrasive disc is "capable of withstanding considerable forces by a workpiece during a powered rotation of the disc against a workpiece." (Col. 1, lines 8-14). Block emphasizes "reliable resistance of the disc to high forces from a workpiece." (Col. 1, lines 15-20). In other words, Block has already disclosed a disc that can withstand severe stresses, and thus would not

deform or disintegrate during use. Block discloses that it meets this objective on its own and leaves no unmet need or desire in this regard. Therefore, there would be no motivation for one to modify Block or combine it with Stout in the way the Examiner has suggested, or even any apparent need to do so. The mere fact that references can be combined does not render the resultant combination obvious unless the prior art suggests the desirability of the combination.

Further, Block explains the disadvantages of a "center-hole locking system." (Column 1, line 36 - Column 2, line 6). In such a system, a disc is mounted onto a rotating tool by sliding the hole of the disc onto a threaded tool shaft and screwing a nut with a shoulder onto the shaft, thereby compressing the disc between the shoulder of the nut and the central area of the support pad so that the disc is held by friction against circumferential movement relative to the support pad. (Col. 1, lines 36-47). One disadvantage of this system is that the nut is easily lost; another is that the nut must be set so tightly to frictionally secure the disc that a wrench often must be used to seat and/or unseat the fastener to couple and uncouple the disc from the holder; moreover, use of the disc causes further compression of the disc between the shoulder of the fastener and the central area of the support pad, resulting in a spring-type lock-washer effect, further resisting the unseating of the fastener. (Col. 1, lines 47-68). Block explicitly teaches away from the desirabilty of a center-hole disc mounting system and provides "a disc which overcomes the above difficulties" and one which "is constructed to provide a positive engagement with a support holder without compressing the disc and converting the disc, as a practical matter into a lockwasher." (Col. 2, lines 51-55). On the other hand, Stout teaches exactly the type of center-hole locking system decried by Block: "an abrasive disc, which is typically frictionally mounted on the back-up pad; and a rotatable shaft and cap for mounting the abrasive disc and back-up pad by pressure applied to the disc upon screwing the cap into the shaft so that the disc is squeezed against the back-up pad." (Col. 1, lines 23-32; Figs. 1 and 3). Thus, Block itself points out the undesirability of the combination with Stout. Again, the mere fact that references can be combined does not render the resultant combination obvious unless the prior art suggests the desirability of the combination.

Applicant submits that it is impermissible to use the claimed invention as an instruction manual or "template" to piece together the teachings of the prior art so that the claimed invention is rendered obvious. It is impermissible to use hindsight reconstruction to pick and choose among isolated disclosures in the prior art to deprecate the claimed invention.

Because there is no suggestion in the prior art for the combination of the Block and Stout references, Applicants respectfully submit that such combination is improper. In view of the foregoing, Applicants respectfully request the withdrawal of the rejection of claims 1, 2, 4-13 and 16-18 under 35 U.S.C. § 103(a).

Claim Rejections Under 35 U.S.C. Section 103 In View of Block and Hettes:

The Examiner rejected claim 3 under 35 U.S.C. § 103(a) as being unpatentable over Block in view of Hettes, U.S. Patent No. 5,752,876. The applicability of the Block reference has been discussed above. Claim 3 depends from independent claim 1. Hettes teaches a flap disc 100. Even in combination, the Block and Hettes references do not teach or suggest an abrasive article comprising a backing plate made of a thermoplastic binder material and fibrous reinforcing material; an abrasive layer; and a fastener press fitted to the backing plate. Thus, independent claim 1 is patentable over the combination of Block and Hettes. Accordingly, dependent claim 3 is also patentable. Therefore, Applicants respectfully request the withdrawal of the rejection of claim 3 under 35 U.S.C. § 103(a).

Claim Rejections Under 35 U.S.C. Section 103(a) In view of Block and Tinnerman:

The Examiner rejected claim 14 under 35 U.S.C. § 103(a) as being unpatentable over Block, et al. in view of Tinnerman, U.S. Patent No. 2,156,002. Tinnerman teaches a fastening device which is used in one embodiment of the present invention. However, the combination of Block and Tinnerman do not teach or suggest an invention as claimed in independent claim 1 and discussed above, namely an abrasive article comprising a backing plate made of a thermoplastic binder material and fibrous reinforcing material; an abrasive layer; and a fastener press fitted to the backing plate.

Therefore, claim 1 is allowable over the Block and Tinnerman references. Accordingly, dependent claim 14 is likewise allowable. Applicants respectfully request the withdrawal of the rejection of claim 14 under 35 U.S.C. § 103(a).

Claim Rejections Under 35 U.S.C. Section 103(a) In View of Block and van Buren, Jr.:

The Examiner rejected claim 15 under 35 U.S.C. § 103(a) as being unpatentable over Block, et al. in view of van Buren, Jr., U.S. Patent No. 4,245,438. Van Buren teaches a fastener which is used in an alternative embodiment of the present invention. Even in combination, the Block and van Buren references do not teach or suggest the invention of independent claim 1, as discussed above, namely an abrasive article comprising a backing plate made of a thermoplastic binder material and fibrous reinforcing material; an abrasive layer; and a fastener press fitted to the backing plate. Claim 15 depends from claim 1 and is likewise patentable. Therefore Applicants respectfully request the withdrawal of the rejection of claim 15 under 35 U.S.C. § 103(a).

New claims 19-21

New claims 19-21 are presented to define Applicants' invention in claims of alternative scope and format. New claims 19-21 are directed to subject matter supported by the specification. The specification explains that abrasive disc 10 is composed of backing plate 22, abrasive material 20 and fastener 24. (Page 6, lines 13-15 and 20-29; FIGS. 2 and 3). Examples of such abrasive materials include coated abrasives, bonded abrasives, and non-woven abrasives which are known in the art. (Page 20, lines 7-9). The specification teaches, in the incorporated references at page 20, lines 18-27, that such abrasive materials comprise a substrate and a plurality of abrasive particles secured to the substrate by a binder. (See, for example, Larmie, U.S. Patent No. 5,429,647, col. 9, line 57 - col. 10, line 33). Such a substrate may be, for example, a backing layer or a porous filament structure. Applicants respectfully submit that the subject matter of claims 19-21 is allowable, and notice to that effect is respectfully requested.

CONCLUSION

Applicants have attempted in earnest to address each issue raised by the Examiner. In view of the foregoing, Applicants believe that claims 1-21 are in condition for allowance and respectfully request a notice of allowance regarding these claims.

The Commissioner is authorized to charge any additional fees associated with this paper or credit any overpayment to Deposit Account No. 11-0982.

Respectfully submitted,

KINNEY & LANGE, P.A.

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